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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,564	12/03/2003	Ephraim Gutmark	003-099	4003

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EXAMINER

COCKS, JOSIAH C

ART UNIT

PAPER NUMBER

3749

DATE MAILED: 09/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Advisory Action  
Before the Filing of an Appeal Brief**

Application No.

10/725,564

Applicant(s)

GUTMARK ET AL.

Examiner

Josiah Cocks

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**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

THE REPLY FILED 14 August 2006 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.  
b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**NOTICE OF APPEAL**

2. ☒ The Notice of Appeal was filed on 14 August 2006. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

**AMENDMENTS**

3. ☒ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because  
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);  
(b) ☐ They raise the issue of new matter (see NOTE below);  
(c) ☒ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or  
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_. (See 37 CFR 1.116 and 41.33(a)).

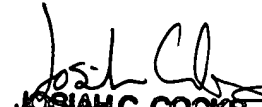
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).  
5. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.  
6. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).  
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.  
The status of the claim(s) is (or will be) as follows:  
Claim(s) allowed: \_\_\_\_\_.  
Claim(s) objected to: \_\_\_\_\_.  
Claim(s) rejected: \_\_\_\_\_.  
Claim(s) withdrawn from consideration: \_\_\_\_\_.

**AFFIDAVIT OR OTHER EVIDENCE**

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).  
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).  
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

**REQUEST FOR RECONSIDERATION/OTHER**

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:  
See continuation sheet.  
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08 or PTO-1449) Paper No(s). \_\_\_\_\_.  
13. ☐ Other: \_\_\_\_\_.

  
**JOSIAH C. COCKS**  
**PRIMARY EXAMINER**

**Continuation Sheet**

**Continuation of item 11:**

The examiner maintains all the rejections of the claims presented in the Office action mailed 2/14/2006.

**Regarding the 35 USC 103 rejection**

Applicant first argues that the prior art relied upon by the examiner does not suggest the claimed method and device that simultaneously affects two different interference frequencies of thermoacoustic oscillations. Applicant further argues that the “coherent structures” described in Gutmark and reference by the examiner are not properly considered to be multiple interference frequencies. The examiner does not agree.

The examiner notes that Gutmark describes in the description of the background art that thermoacoustic vibrations form in combustion applications that lead to undesirable high amplitude fluctuations (see col. 1, lines 17-24). Gutmark further describes that the purpose of his invention is to counteract the formation of “coherent structures” that results in reduction or prevention of undesirable fluctuations of the system which further results in reduction of the amplitude of thermoacoustic vibrations (see col. 1, lines 66 through col. 2, lines 6). Gutmark further goes on to suggest that the means by which the amplitude of the thermoacoustic vibrations are controlled is through the acoustic excitation of a shear layer within the working gas of the combustion system (see col. 2, lines 6-32). The excitation of the shear layer is accomplished through the induction of multiple distinct frequency waves (e.g. the subharmonic

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and fundamental waves, see col. 2, lines 41-48, or as many as four waves, see col. 2, lines 48-56 and Fig. 1B). The frequency waves are naturally amplified by their location within the shear layers. The amplification of these waves serves to superpose the waves that are already present or originally exist in the combustion chamber (see col. 5, lines 50-55), such superposition serving to prevent or diminish the coherent structures in the combustion chamber (see col. 5, lines 56-59). These "coherent structures" are considered to be the undesirable fluctuations above, which are considered to correspond to the distinct frequency waves noted above. Accordingly, the counteracting of the "coherent structures" described in Gutmark is to simultaneously affect multiple different frequencies (i.e. at least the subharmonic and fundamental frequency waves that are disclosed as originally present in the combustion chamber) in the manner claimed by applicant.

Applicant also argues that the prior art relied upon by the examiner does not show both acoustic excitation and fuel injection modulation. In response, the examiner notes that Gutmark clearly provides for multiple means for exciting the shear layer, describing at least at column 5, lines 46-48 and column 9, line 44 through column 10, line 5, that multiple acoustic drivers (10a, 10b, 10c, and 10d) are individually controllable to individually excite the shear layer. Gutmark also provides that the excitation may be accomplished through mechanical means at the desired frequency (see col. 3, lines 42-44). Further, Gutmark appears to suggest that fuel injection modulation may also be used (see col. 3, lines 26-31), however, details of the fuel injection modulation are not described. To remedy this deficiency the examiner has turned to Paschereit. As noted in the prior Office action, Paschereit clearly suggests the correlation of fuel injection modulation with suppressing thermoacoustic vibrations (see Paschereit, at least page 1 paragraph

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[0007] and page 2, paragraphs [0027-0029]). Accordingly, the examiner considers that a person of ordinary skill in the art would reasonably be prompted to incorporate fuel injection modulation for one of the acoustic drivers or mechanical devices disclosed in Gutmark to control thermoacoustic vibrations in a combustion system, which is recognized as desirable in both Gutmark and Paschereit.

Regarding the double patenting rejection

Applicant also argues that the provisional obvious type double patenting rejection applied to claim 7 is in error. Applicant asserts that “the function of a control system does structurally limit an apparatus claim” (response, p. 7). Applicant does not point to any support for this general statement.

In response the examiner notes that it has been held that “[w]hile features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. See MPEP 2144 (citing *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997)). Further, “apparatus claims cover what a device *is*, now that a device *does*.” Id. (citing *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)).

Applicant argues that the control system of claim 7 of this application that functions “to simultaneously affect at least two different frequencies of the thermoacoustic oscillations” is necessarily distinguished from the control system of application 10/725,563 that functions “to affect the same interference frequency of the thermoacoustic oscillations” as these control system

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are “adapted for” these different functions (see response, p. 9). The examiner notes that the MPEP specifies that “[c]laim scope is not limited by claim language that does not limit a claim to a particular structure.” See MPEP 2111.04. While, the claims in question do not include the terms “adapted for” the examiner notes that “adapted for” language may give rise to a question as to the limiting effect of the language in a claim. Further, the examiner agrees with applicant that the actual claim language of applicant’s claims appears similar in scope to the noted “adapted for” language and therefore appears to be included in the non-exhaustive list of language that may give rise to a question as to the limiting effect the language. Id. The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case. Id.

Reviewing the specific facts of this case reveals that in this application a control algorithm (13) of a control system (2) sets the phase shifts of time delay elements (11 and 11’) independently of one another and allows for independent control of the acoustic source and the control valve (see applicant’s specification, page 6, lines 24-31) based on the frequency of two band-pass filters (10 and 10’) that are disclosed to be “tuned to different interference frequencies” (see applicant’s specification, page 5, lines 6-8). There is no disclosure as to any limit on the frequency that either of the band-pass filters is individually tuned to. Applicant merely intends that in the operation of the control system the frequencies are tuned to different frequencies to thereby effect different frequencies. For example, band-pass filter (10) could be tuned to a frequency X and band-pass filter (10’) could be tuned to a frequency Y. Alternatively, band-pass filter (10) could be tuned to frequency Y and band-pass filter (10’) could be tuned to frequency X. Thus, in this example, either of the band-pass filters are capable of being tuned to either frequency X or Y. Therefore, the control system recited in claim 7 is structurally capable of

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having both band-pass tuned, for example, to frequency X. Accordingly, as the control system is structurally capable of affecting the same interference frequency (as recited in claim 7 of application 10/725,563) the control system, and thus the entire device claim, is considered to be anticipated by the device claim 7 of application 10/725,563. As a result, the provisional obviousness-type double patenting rejection noted above appears to be properly applied.